

LOOW Sitewide RI/FS Scope of Work

1 General Background

The Lake Ontario Ordnance Works (LOOW) was originally constructed in the late 1930's and early 1940's for the production of the explosive trinitrotoluene (TNT) for World War II. The plant operated for about nine months and was decommissioned in 1943. Portions of the LOOW site have since been used by several branches of the federal government for various manufacturing, storage and testing activities. These activities included:

- TNT Facility (1939-1942);
- Boron 10 Facility (1953-58, 1964-71) ;
- Ransomville Test Annex (~1961-66);
- Youngstown Test Annex Defense Communication Station (~1966);
- Air Force Plant 38 (~1947-1989);
- Nike Battery NF-03 (~1957-60);
- Air Force Plant 68 (~1955-59);
- Navy Bureau of Aeronautics Interim Production Pilot Plant (IPPP) (~1955);
- Youngstown Troopscatten Range Facility(~1966).

The original LOOW site encompassed approximately 7,500 acres with the majority of Department of Defense (DOD) site activities having occurred on about 2,500 acres.

Investigative activities by the DOD and property owners have identified contamination believed to be related to past DOD activities in specific portions of the site. To date, DOD investigative efforts have been focused on specific areas of limited extent at the LOOW site. Currently DOD is performing a Interim Remedial Design/Remedial Action (RD/RA) on these specific areas.

The Remedial investigation/Feasibility Study (RI/FS) to be performed under this contract is intended to identify DOD related contamination throughout the entire LOOW site. This sitewide RI/FS will be completed in accordance with the following tasks:

- Task 1 Scoping
- Task 2 GIS Setup and Historical Data Input
- Task 3 History Search
 - 3.1 File Search
 - 3.2 Aerial Photograph Review
 - 3.3 Title Search

- 3.4 Draft History Search Report
- 3.5 Final History Search Report
- Task 4 Project Planning Documents
 - 4.1 Sitewide Work Plan
 - 4.2 Sitewide Health and Safety Plan
 - 4.3 Sitewide Sampling and Analysis Plan
 - 4.4 Community Relations Plan
- Task 5 Phase I Interim Remedial Investigation
 - 5.1 Preinvestigation Planning Documents
 - 5.2 Field Investigation
 - 5.3 Draft Phase I Interim Remedial Investigation Report
 - 5.4 Final Phase I Interim Remedial Investigation Report
- Task 6 Phase II Interim Remedial Investigation
 - 6.1 Preinvestigation Planning Documents
 - 6.2 Field Investigation
 - 6.3 Draft Phase II Interim Remedial Investigation Report
 - 6.4 Final Phase II Interim Remedial Investigation Report
- Task 7 Baseline Risk Assessment and Final Remedial Investigation Report (Option)
 - 7.1 Baseline Risk Assessment
 - 7.2 Draft Final Remedial Investigation Report
 - 7.3 Final Remedial Investigation Report
- Task 8 Feasibility Study (Option)
 - 8.1 Draft Feasibility Study Report
 - 8.2 Final Feasibility Study Report
- Task 9 Meetings/Conferences
 - 9.1 Project Meetings and Reporting
 - 9.2 Technical Review Committee Meetings
 - 9.3 Public Meetings
- Task 10 Submittal Schedule
- Task 11 Review Distribution List and Locations

The Consultant shall develop the Remedial Investigation/Feasibility Study presented above. The data generated from this investigation, shall be separated into Components, i.e. the first Component shall be identified as the Chemical Waste Management (CWM) property, the second Component shall be identified as the Somerset property etc. The scope of work presented herein identifies work items associated with Tasks 1 through 6 and Tasks 9 through 11. Tasks 7 and 8, the Baseline Risk Assessment and Feasibility Study, are identified as options. The detailed scope of work for these tasks will be defined at a future date as additional data becomes available.

2 Remedial Investigation/Feasibility Study Scope of Work

Task 1 Scoping

The Consultant shall assist the Corps of Engineers in developing a scope of work (SOW) for a sitewide RI/FS at the 7,500 acre site located in Niagara County, NY.

The SOW shall include work items for those areas of the LOOW site that have remaining data gaps identified during previous investigations and areas of concern identified by property owners. The SOW shall also include those efforts necessary to identify other as yet unidentified areas of possible DOD related contamination. The purpose of the RI/FS is to determine the nature and extent of DOD related contamination at the former LOOW site and to identify remedial action objectives, screen remedial action technologies and alternatives, and to perform a detailed technical and cost analysis of those alternatives.

Other scoping related activities will include:

- The preparation of a summary of LOOW remaining areas of concern based on data collection and investigations conducted to date by the Corps of Engineers.
- The determination of requirements for the development of a Geographic Information System (GIS) database for the overall 7,500 acre site.

Task 2 GIS Setup and Historical Data Input

Utilizing a newly-developed topographic base map, the Consultant shall develop a Geographic Information System (GIS) database for the LOOW site. The GIS shall be developed using Intergraph GIS ERMA software.

As part of this task, the Consultant shall compile all relevant analytical and site characterization data from previous RI/FS activities performed at the LOOW site for the DOD and input this data into the site GIS database. Subsequent data collected during the RI/FS for the site shall be, to the extent, practicable, obtained in appropriate data format so as to allow the direct input of the data into the GIS database. For cost estimating purposes, the Consultant shall assume the input of 10,000 data points (9,000 historical and 1,000 current), which includes data from previous DOD investigations, and relevant and representative site data from investigations conducted by LOOW property owners.

The GIS data shall be delivered as follows: One Intergraph RIS database dump file for Oracle to include both database structure and data and all associated Microstation design files shall be in the native .dgn format.

Task 3 History Search

3.1 File Search

The Consultant shall perform a search of existing regulatory agency, federal government and private files (e.g., NYSDEC, National Archives, CWM, Somerset Group, etc.) as necessary in order to compile a complete history and understanding of the types and locations of past operations at the LOOW site during the period of approximately 1938 to 1986. The results of the data search shall be used to insure that the RI/FS will gather the information and data necessary to perform a baseline risk assessment and feasibility study.

3.2 Aerial Photographic Review

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The Consultant shall compile and evaluate available historical aerial photographs for the 7,500 acre LOOW site during the time period of approximately 1938 through 1986. This evaluation will be used to assist in the identification of past operations and waste disposal areas. Aerial photography will be incorporated within the GIS system.

3.3 Title Search

The Consultant shall identify current site owners through a research of land/tax records. The title search of records shall include identifying intervening owners subsequent to transfer of the property from the Government. Copies of pertinent deeds or other data/records shall be provided to the Corps of Engineers upon the Consultant's submittal of the Draft History Search Report. The Consultant submittal shall include a list of all current site owners including name, current address, and telephone number, as well as property size (acreage). A map showing current property boundaries will be provided. This map shall be one of the layers within the GIS system.

3.4 Draft History Search Report

The results of the file search and aerial photographic review shall be compiled into a Draft History Search Report. The draft report shall include recommendations for areas of investigation based both upon the results of the file search/aerial photograph review and for areas identified by previous investigations by the DOD and others.

3.5 Final History Search Report

Upon review of the draft report, the Consultant shall provide written responses to the draft report review comments. Upon acceptance of responses to the Draft History

Search Report, the Consultant shall incorporate agreed upon revisions into a Final History Search Report.

Task 4 Project Planning Documents

The Consultant shall prepare project planning documents for use throughout the duration of the RI/FS. The project documents shall include a sitewide Work Plan, Sampling and Analysis Plan, Health and Safety Plan, and Community Relations Plan. The documents shall be prepared in such a manner so that they may be easily amended for future investigation activities.

Due to differences in site contamination and potential exposure and receptor scenarios, the sitewide RI/FS areas of investigation will be subdivided into several Component areas. Based on currently-available site information, Component 1 has been identified as areas of investigation located on CWM Chemical Services, Inc. property, and Component 2 includes those areas of investigation located on Somerset Group property. Other Components will be identified, as necessary, when additional data becomes available.

4.1 Sitewide Work Plan

The Consultant shall develop a Sitewide Work Plan which provides a project description, outlines the overall technical approach, and satisfies the requirements of "Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA," USEPA Publ. No. EPA/540-G-89/004, OSWER Directive 9355.3-01, October 1989. The following elements shall be presented in the Sitewide Work Plan:

4.1.1 Work Plan Rationale

The document shall summarize the SOW and present the overall approach to be followed for completion of the project and identify how the field activities will satisfy data needs. It shall present the site background and current status, summarize previous investigations, a time table of field activities and objectives. It shall discuss project management, and present the scope approach and deliverable requirements for the remaining tasks. The work plan shall also address QA/QC and Health and Safety Requirements. As part of the Work Plan development, the Consultant's Risk Assessor and Corps of Engineers' Risk Manager will evaluate the need for possible additional Components based on existing site risks, and will then identify necessary data quality objectives. Additional Components may be identified as the sitewide RI/FS progresses and additional data becomes available.

Depending on the RI/FS needs for each Component, the Work Plan will document requirements for the baseline risk assessment and the alternatives evaluation identified during the formulation of the data quality objectives.

4.2 Sitewide Health and Safety Plan

The Consultant shall review available site information and develop the necessary health and safety documents to protect onsite personnel, the environment, and potential offsite receptors. The Consultant shall utilize the services of qualified personnel, as defined in ER 385-1-92, to oversee the development and implementation of required health and safety documents.

All site investigation activities and health and safety documents required by this scope of work shall comply with pertinent sections of the following regulations and reflect the following guidance publications:

1. Federal Acquisition Regulation, F.A.R. Clause 52.236-13: Accident Prevention.
2. U.S. Army Corps of Engineers, Safety and Health Requirements Manual, EM 385-1 1.
3. U.S. Army Corps of Engineers, ER 385-1-92, Safety and Occupational Health Document Requirements for Hazardous, Toxic, and Radioactive Waste (HTRW) Activities.
4. Occupational Safety and Health Administration (OSHA) General Industry Standards, 29 CFR 1910, and Construction Industry Standards, 29 CFR 1926.
5. NIOSH/OSHA/USCG/EPA, "Occupational Safety and Health Guidance Manual for Hazardous Activities", October 1986. (OHHS NIOSH) Publication No. 85-115).
6. Other applicable federal, state, local, and site specific safety and health requirements.

The following health and safety documents will be required:

1. Corporate Health and Safety Program. The Occupational Safety and Health Administration (OSHA) requires all employers performing onsite activities at hazardous waste sites to develop and maintain an ongoing written Health and Safety Program in compliance with OSHA Standard 29 CFR 1910.120(b)/29 CFR 1926.66(b). The program, including updates, shall be available upon request.

2. **Sitewide Health and Safety Plan (HASP).** The HASP required by 29 CFR 1910.120(b)(4)/29 CFR 1926.65(b)(4), and as defined by this SOW, shall be prepared and submitted. Onsite activities shall not commence until the plan has been reviewed and accepted. The HASP shall describe the site specific health and safety procedures, practices, and equipment to be implemented and utilized in order to protect affected personnel from the potential hazard associated with the specific tasks to be performed. The level of detail provided in the HASP shall be tailored to the type of work, complexity of operations to be accomplished, and hazards anticipated. The Consultant shall address all elements contained in Appendix B of ER 385-1-92 in preparing the HASP. Where a specific topic is not applicable to the project, the Consultant shall provide a negative declaration to ensure that adequate consideration was given to the topic, and provide a brief justification for its omission. Information readily available in standard texts shall be repeated only to the extent necessary to meet the requirements of this SOW. The HASP shall not duplicate general information contained in the Corporate Health and Safety Program which was not specifically related to this project.

4.3 Sitewide Sampling and Analysis Plan

The Consultant shall develop and submit a Sitewide Sampling and Analysis Plan (SAP). This document shall be developed as a reference document for future work activities and shall address such items as planning, sampling protocols, sample handling, analytical methods and related quality assurance/quality control requirements, and data reporting and presentation associated with work activities. This plan shall be developed in accordance with the U.S. Army Corps of Engineers' EM Document No. 200-1-3 and ER 1110-1-263, April 1996, New York State Department of Environmental Conservation (NYSDEC), and EPA requirements.

4.4 Community Relations Plan

This document shall detail the Corps of Engineers method for informing the community of activities taking place at the LOOW site and solicit community input. The Consultant shall be responsible for remaining familiar with all aspects of the plan. If, during the duration of the work, there occurs a circumstance requiring a revision to the project Community Relations Plan, the consultant shall be required to identify the need to modify the plan, prepare the modification, and coordinate and distribute the modified plan. One comprehensive Community Relations Plan shall be developed for the project.

The Consultant shall be required to prepare community relations materials. For estimating purposes, the Consultant shall assume that these materials will include the preparation of one of each of the following: scrapbook of news clippings; press release; fact sheet; notice of availability; and public notice. All materials shall be prepared in draft form and coordinated with the Design Manager of the Baltimore

) District before preparation of the final version. The scrapbook of news clippings shall be maintained from local and regional newspapers and press releases. The Corps of Engineers shall receive monthly updates and four copies of the scrapbook upon completion of the project. The Consultant shall also be required to attend one public information session.

Task 5 Phase I Interim Remedial Investigation

Based on the results of Tasks 2 and 3, the Consultant shall conduct Phase I field investigations to confirm or deny the presence of DOD related contamination at LOOW. The results of this investigation will be used to refine the focus of the Phase II Interim Remedial Investigation field efforts to be performed in Task 6. The scope of work for the Phase I investigation will, in part, be dictated by the results and recommendations of Task 3 – History Search. At a minimum, the Phase I Investigation will focus on identifying the possible presence of contamination in the following areas:

- Possible soil and groundwater contamination associated with Areas A and B (i.e., chloroform, carbon tetrachloride, and methylene chloride in groundwater samples collected from CWM's monitoring well MW-7-3S located on the south side of H Street just across from Areas A and B).
- Possible soil and groundwater contamination associated with the TNT production facility including existing buildings and related structures, buried TNT sewer lines, acid sewer lines, and storm and sanitary sewers.
- Possible soil and groundwater contamination associated with the AFP 68 chemical waste sewer system.
- Possible contamination associated with the remaining 280 +/- acre portion of the Nike Missile Base not previously investigated.
- PCB contaminated surface soils in the TNT Buildings Area : In 1989 CWM performed a sitewide surface soil and surface water drainage course investigation which involved monitoring for PCB and metals contamination. As a result of the program, CWM identified PCBs in surface soils in the vicinity of the existing TNT buildings.
- Well P1 2-2S: CWM performed some limited investigations in the P12-2S area and determined that the contamination was present to the north, east and south (toward Area C and North of C) but the lateral and vertical extent of contamination was not confirmed.

- **Waterline Construction Areas:** In April 1986, while performing excavation activities for the installation of a new waterline, CWM encountered four areas of visibly contaminated soils apparently associated with existing pipelines from the original TNT facility. All contaminated material from each area was excavated and disposed of in an onsite landfill.

Waterline Construction Area 1 was located near the main plant entrance on Marshall Street. A total of 46 cubic yards of material were excavated from this area.

Waterline Construction Area 2 was located farther down Marshall Street across from the PCB warehouse. A total of 545 cubic yards was excavated from this area. Analytical results for three soil samples collected from the area indicated the presence of PCBs and several VOCs including carbon tetrachloride, toluene, trichloroethane, and chlorobenzene.

Waterline Construction Area 3 was located on M Street near the intersection of MacArthur Street. Approximately 35 cubic yards of contaminated soil was removed from this area.

Waterline Construction Area 4 was located near CWM's Aggressive Biological Treatment Unit Tank 58 located farther west on M Street. The volume and types of contamination associated with this area is unknown.

- **Property G:** While conducting remedial actions in the NFSS in 1986, the DOE discovered 31 drums of sludge in an area identified as Property G along the boundary of CWM and the NFSS. The contents of the drums were analyzed and determined to contain numerous contaminants including benzene, toluene, ethylbenzene and xylenes as well as several PAHs. The drums were disposed of by CWM in SLF 11 but it is unknown if the area was ever investigated to determine if additional contamination associated with the drums exists.
- **PCB Warehouse Area:** Past investigations by CWM had identified some subsurface contamination possibly related to an underground storage tank adjacent to a former LOOW TNT building located along MacArthur Street. The building is referred to as the PCB Warehouse by CWM.
- **Areas of Concern Identified By Others**
 - Boos Property (J&T Auto) - an alleged former government disposal area;
 - Fin, Feather and Fur Conservation Club - suspicious pits circa 1942;
 - Wieland's well at 954 River Rd. (Rte 18F) - boron contamination in well water; and

Long's Walleye hatchery - TNT detonation bunkers located to the east of the hatchery.

5.1 Preinvestigation Planning Documents

In preparation for the Phase I Investigation, the Consultant shall prepare and submit an addenda to the Sitewide Work Plan, HASP and SAP prepared in Task 3. The addenda shall define the data quality objectives and specific details of the planned Phase I Investigation activities and procedures.

5.2 Field Investigation

The Consultant shall conduct field investigations to obtain the required information to confirm the presence or absence of contamination in the identified areas of concern. The Consultant shall utilize investigative methods that provide the most cost and time efficient identification of possible contamination in the areas of concern. These efforts shall include but not be limited to metal detection surveys in areas of proposed intrusive activities, soil borings, surface soil and water sampling, wipe/chip sampling, subsurface soil and groundwater sampling, and test pit excavations.

The Phase I field effort will consist of the investigative methods and analyses identified in Tables 1 and 2. The activities to be performed include the following:

1. Subsurface drilling using the direct push (e.g., Geoprobe) methodology to maximum depths of 25 ft at 190 locations;
2. Excavation of exploratory test pits to maximum depths of 15 ft at 30 locations; and
3. Collection of multimedia environmental samples consisting of:
 - Subsurface soil and groundwater samples from the abovementioned direct push sampling locations;
 - Subsurface soil samples from the abovementioned 30 test pit locations;
 - Surface soil samples at 50 locations;
 - Surface water and sediment samples from site drainage systems (20 locations);
 - Sewer water and sludge samples from TNT sewer systems (20 locations);
 - Wipe/chip samples from TNT buildings and related structures (20 locations);
 - Groundwater samples from 20 residential wells; and
 - Groundwater samples from 15 existing monitoring wells.

Samples collected during the Phase I Interim Investigation will be analyzed by the following field and/or laboratory analytical methods. All laboratory analyses will be performed in accordance with EPA SW-846 methodologies (e.g., Methods 8240,

8330, 8270, and 8080 for organics and 6000/7000 series methods for inorganics). Sample analyses are summarized in Tables 3 and 4. The following analyses will be performed:

- Subsurface soil samples collected by direct push drilling methodology will be field analyzed for volatile organic contaminants using a portable gas chromatograph (GC).
- Select subsurface soil samples will also be submitted to the laboratory for analysis of Target Compound List (TCL) organics and Target Analyte List (TAL) inorganics.
- Surface soil samples from the vicinity of the existing TNT buildings will be field screened for PCBs using immunoassay test kits. Select soil samples will also be submitted to the laboratory for PCB analyses.
- Surface soil samples from the Long's Walleye Hatchery property will be field screened (eg. Immunoassay or Colorimetric) and laboratory tested for explosives (i.e., TNT using SW 846 Method 8330) to determine the absence/ presence of residual explosives in that area.
- Subsurface soil samples collected from test pit excavations in the waterline construction areas will be analyzed for TCL and TAL contaminants.
- Sewer water and sediment samples will be collected from various TNT sewer systems (e.g., acid waste, storm water, sanitary) accessed by test pit excavations, and will be analyzed for TCL and TAL contaminants and explosives. In addition, sewer sediment and soils immediately adjacent to the sewer pipelines will be field screened for explosives.
- Wipe/chip samples will be collected from the existing TNT buildings and related structures and analyzed for explosives.
- Groundwater samples, collected from residential wells in the site vicinity, select site monitoring wells and direct push locations, will be analyzed for TCL and TAL contaminants. Select samples from suspected TNT contaminated areas will also be analyzed for explosives and dissolved oxygen, turbidity, pH, Eh and REDOX
- Surface soil samples from the Fin, Feather and Fur Club property will be analyzed for TCL, TAL, and explosives contaminants.

- Surface water and sediment samples collected from site drainage systems will be analyzed for TCL and TAL contaminants. Surface water analyses will also include assessments of flow rate, dissolved oxygen, turbidity, pH and Eh.
- Select subsurface soil samples will also be analyzed for pH, Eh, REDOX and Total Organic Carbon (TOC).

5.3 Draft Phase I Interim Remedial Investigation Report

The Consultant shall, after completion of field work, laboratory analyses, data validation and data review, evaluate the data collected and present the data in a Draft Phase I Interim Remedial Investigation Report. All available site data shall be used in the preparation of this report including sampling results obtained during this study and historical data from other studies. Data presented shall be sufficient to allow the determination of the presence or absence of contamination in the study areas, and identify which areas will go to Phase II Interim Remedial Investigation, Remedial Action, Feasibility Study, or Decision Document phases. The Consultant shall also provide recommendations for areas to be investigated under Task 6 - Phase II Interim Remedial Investigation.

The Phase I Interim Remedial Investigation Report shall be formatted as follows:

- 1.0 Executive Summary
- 2.0 Introduction
 - 2.1 Purpose of Report
 - 2.2 Site Background
 - 2.2.1 Site Description
 - 2.2.2 Site History
 - 2.2.3 Previous Investigations
 - 2.3 Report Organization
- 3.0 Study Area Investigations
 - 3.1 Surface Features
 - 3.2 Contaminant Source Investigations
 - 3.3 Surface Water and Sediment Investigations
 - 3.4 Geological Investigations
 - 3.5 Soil and Vadose Zone Investigations
 - 3.6 Groundwater investigations
- 4.0 Physical Characteristics of Study Area
 - 4.1 Surface Features
 - 4.2 Meteorology
 - 4.3 Surface Water Hydrology
 - 4.4 Geology
 - 4.5 Soils
 - 4.6 Hydrogeology

- 4.7 Demography and Land Use
- 4.8 Ecology
- 5.0 Field Investigation Procedures
- 6.0 Analytical Results
- 7.0 Site Characterization
 - 7.1 Sources of Contamination
 - 7.2 Soils and Vadose Zone
 - 7.3 Groundwater
 - 7.4 Surface Water and Sediments
- 8.0 Phase I Interim Remedial Investigation Summary and Conclusions
 - 8.1 Summary
 - 8.1.1 Nature and Extent of Contamination
 - 8.2 Conclusions
 - 8.2.1 Data Gaps and Limitations
 - 8.2.2 Recommendations for Phase II Interim Remedial Investigations

5.4 Final Phase I Interim Remedial Investigation Report

Upon receipt of review comments on the draft report, the Consultant shall provide written responses to all review comments to the Baltimore District Design Manager. Upon resolution of all comments and responses, the Consultant shall incorporate agreed upon responses into a Final Phase I Interim Remedial Investigation Report.

Task 6 Phase II Interim Remedial Investigation

6.1 Planning Documents

In preparation for the Phase II Interim Remedial Investigation, the Consultant shall prepare and submit an addenda to the Sitewide Work Plan, HASP and SAP prepared in Task 3. The addenda shall identify the data quality objectives and specific details of the planned remedial investigation activities and procedures. Information gathered as a result of previous tasks regarding waste sources, pathways, and receptors shall be used to develop a conceptual understanding of the site to evaluate potential risks to human health and the environment.

6.2 Field Investigation

The Consultant shall conduct Phase II field investigations to obtain the required information to identify the lateral and vertical extent of contamination as necessary to perform a baseline risk assessment for the identified areas of concern.

The Consultant shall utilize investigative methods that provide the most cost and time efficient identification of possible contamination in the areas of concern. The investigations shall be sufficient to characterize the nature and extent of risks posed by the contamination and for evaluating potential remedial options.

These efforts shall include but not be limited to geophysical surveys; soil borings; well installations; surface soil and water sampling; wipe/chip sampling; subsurface soil and groundwater sampling; surface and groundwater use surveys; ecological assessments; and test pit excavations.

For Bidding purposes, the Consultant shall assume that the Phase II Remedial Investigation effort will consist of the following:

1. Installation of 25 shallow single-cased monitoring wells to a maximum depth of 25

ft. $\$32.08/\text{ft} = \802.00

2. Installation of 25 deep, double-cased monitoring wells to a maximum depth of 75 ft.

3. Excavation of exploratory test pits at 30 locations. 10 days

4. The collection of multimedia samples consisting of the following:

- 100 surface soil samples; 10 days
- 60 subsurface soil samples from the abovementioned test pits;
- 50 subsurface soil samples from the abovementioned monitoring wells; } include in #3
- 30 surface water and sediment samples; 3 days
- 50 groundwater samples from the new monitoring wells; - 20 days
- 25 groundwater samples from existing monitoring wells; - 10 days
- 20 wipe/chip samples; and -
- 20 sewer water and sludge samples. - 7 days

All samples shall be analyzed for TCL organics, TAL inorganics, explosives and cyanide according to SW-846 procedures. In addition, the 20 sewer water and sludge samples shall be analyzed for TCL organics, TAL inorganics, cyanide and explosives.

The Consultant shall also perform a geophysical survey program in areas of suspected waste burial and/or contamination. For bidding purposes, it is assumed that the surveys will be performed at 10 locations totaling approximately 10 acres and that electromagnetic (EM) survey techniques will be used.

6.3 Draft Phase II Interim Remedial Investigation Report

Following completion of all field work and validation of all analytical results, the Consultant shall prepare a Draft Phase II Interim Remedial Investigation Report. The draft report shall comprehensively present the data gathered during the investigation.

The Phase II Interim Remedial Investigation Report shall be formatted as follows: A

- 1.0 Executive Summary**
- 2.0 Introduction**
 - 2.1 Purpose of Report**
 - 2.2 Site Background**
 - 2.2.1 Site Description**
 - 2.2.2 Site History**
 - 2.2.3 Previous Investigations**
 - 2.3 Report Organization**
- 3.0 Study Area Investigations**
 - 3.1 Surface Features**
 - 3.2 Contaminant Source Investigations**
 - 3.3 Meteorological Investigations**
 - 3.4 Surface Water and Sediment Investigations**
 - 3.5 Geological Investigations**
 - 3.6 Soil and Vadose Zone Investigations**
 - 3.7 Groundwater Investigations**
 - 3.8 Human Population Surveys**
 - 3.9 Ecological Investigations**
- 4.0 Physical Characteristics of Study Area**
 - 4.1 Surface Features**
 - 4.2 Meteorology**
 - 4.3 Surface Water Hydrology**
 - 4.4 Geology**
 - 4.5 Soils**
 - 4.6 Hydrogeology**
 - 4.7 Demography and Land Use**
 - 4.8 Ecology**
- 5.0 Field Investigation Procedures**
- 6.0 Analytical Results**
- 7.0 Site Characterization**
 - 7.1 Sources of Contamination**
 - 7.2 Soils and Vadose Zone**
 - 7.3 Groundwater**
 - 7.4 Surface Water and Sediments**
- 8.0 Phase II Interim Remedial Investigation Summary and Conclusions**

- 8.1 Summary
 - 8.1.1 Nature and Extent of Contamination
- 8.2 Conclusions
 - 8.2.1 Data gaps and Limitations

6.4 Final Phase II Interim Remedial Investigation Report

Upon receipt of review comments on the draft report, the Consultant shall provide written responses to all review comments to the Baltimore District Design Manager. Upon resolution of all review comments and responses, the Consultant shall incorporate agreed upon responses into a Final Phase II Interim Remedial Investigation Report.

Task 7 - Baseline Risk Assessment and Final Remedial Investigation Report (Option)

7.1 Baseline Risk Assessment

At the option of the Baltimore District Design Manager, the Consultant shall perform a baseline risk assessment to identify the existing or potential risks that may be posed to human health and the environment by the site. The baseline risk assessment shall serve to support the evaluation of the no-action alternative by documenting the threats posed by the site on expected scenarios. The baseline risk assessment will provide valuable input to the development and evaluation of remedial alternatives during the feasibility study.

The baseline risk assessment will be made a part of the Final Remedial Investigation Report. The intent of the baseline risk assessment will be to assess the current and potential future impact of site contaminants on human health and the environment. As such, the baseline risk assessment shall be divided into two sections: A Human Health Evaluation and an Environmental Evaluation.

The evaluations shall be developed using the structure and methodologies outlined in the guidance references presented in paragraph k - "Examples of Guidance" below. Data gathered shall be presented in a format sufficient to allow evaluation of public health and the environment. As a minimum, points (a) through (j), below, shall be addressed:

- a. Site Description. A description of the site and study area, including off-site impact considerations. A full accounting of the ecosystems and populations potentially exposed to contamination must be included. Special attention must be made to state and federal regulations regarding sensitive environments involving wetlands or endangered species.
- b. Chemicals of Potential Concern. Identification of contaminants selected as chemicals of potential concern. Selection shall be based upon frequency of detection, concentration and toxicity of the chemical contaminants. The contaminants of concern shall be described in tabular form. Data may be summarized, but both the mean and range shall be included, with an explanation of calculations made. All sample data must be accounted for.
- c. Exposure Characterization. Identify actual and potential exposure pathways, taking into account environmental fate and transport through both physical and biological means. Each pathway (groundwater, dermal, ingestion) by chemicals and media (soil, water) must be described, and the pathway identified in space and time with respect to the site and the period of the investigation. The data may be presented

on a scatter diagram or site map. Where endangered species have been identified as being impacted by the site contaminants, results of toxicity tests may be displayed using maps. Estimation of exposure point concentrations may be based upon sample results or simple analytical models or computer modeling referenced in the Superfund Exposure Assessment Manual. Simple analytical models can be used to evaluate the need for sophisticated computer modeling. If exposure pathways are modeled, the reporting should clearly state the limiting assumptions and include a full reference for every model used.

Also, discuss statistical significance levels. The following areas shall be addressed:

- (1) The volume, physical and chemical characteristics of the waste known or suspected to be present at the site.
- (2) The absorption, partitioning, and transformation (biological and oxidation/reduction) characteristics of the waste, including its potential for migration. Special emphasis shall be placed on the potential for migration of site contaminants from soils and clays in the vadose zone into the groundwater.
- (3) Of particular concern is the calculation of a water balance using precipitation, evapotranspiration, runoff, and infiltration as factors in the calculation.
- (4) The hydrogeological characteristics of the site and surrounding land with special emphasis on the mobility of groundwater and its potential for transporting contaminants off-site.
- (5) The quality of groundwater with special emphasis on the potential for exceeding groundwater ARARs and direction of groundwater flow.
- (6) The total thickness of the site overburden.
- (7) The thickness of unsaturated zones.
- (8) Elevations of site bedrock surfaces.
- (9) The current and future uses of groundwater in the area, using EPA's "Guidelines for Ground Water Protection Strategy" as guidance.

(10) Contour maps illustrating suggested groundwater and soil contaminant contamination isopleths for each chemical of potential concern, based upon sampling results.

(11) The potential for migration of contaminants from other sources surrounding the site.

- d Toxicological Profiles. Preparation of Toxicological Profiles for the chemicals of potential concern and identification of all applicable and relevant federal and state regulations (ARARs). It is assumed the Toxicological Profiles will not exceed two (2) pages in length for each chemical. These profiles shall be based upon readily available references such as:

ASTDR Toxicological Profiles

EPA Water Quality Criteria Documents

EPA Health Advisories

IRIS (Integrated Risk Information System).

- e. Risk Characterization. The risk characterization shall include a description of the probability that an adverse effect will occur, the magnitude of each effect, the temporal character of each effect, and receptor populations or habitats affected. Describe soil, water quality and/or other criteria (ARARs) which have been exceeded and document the number and location of sample results that exceed acute and/or chronic criteria for protection of the receptor population or species and habitat of concern. Where endangered species have been identified as being impacted by the site contaminants, the risk characterization shall also include a summary describing environmental contaminant concentrations, biota concentrations, toxicity test results, literature toxicity values, results of field surveys of receptor populations, and measures of community structure and ecosystem functions. Ambiguous data must be explained. Also, describe the length of effects if contaminants are removed, receptor population recovery periods including intergenerational effects, contamination movement, effects of remediation, mechanism of restoring community structure and ecosystem function, and prioritization of responses. Risk characterization shall be completed for the composite carcinogenic and non-carcinogenic risk of human exposure to multiple site chemicals.

- f. Contaminant Impacts. Current and future impacts of site contaminants on the ecosystem. As a minimum, the following areas shall be addressed:

(1) Fauna and flora, with emphasis on endangered species.

(2) Critical habitats (wetlands, coastal zones, prime and unique farmlands, etc.).

(3) Any commercial, residential, recreational, and aesthetic uses affected by site contaminants.

- g. Description of Remediation Criteria. Prepare a description of ARARs — water quality, and other criteria, such as TSCA and FIFRA. A full reference citation for the source of reference doses, standards, or risk calculations used in calculating the criteria shall be included. The Consultant shall also include the appropriate federal and state contacts (names, addresses, and phone numbers) used to collect all ARARs used for this study.
- h. Description of Conclusions and Limitations of Analysis. Indicate the degree of confidence in the data, including variance estimates for all statistics, assumptions underlying use of statistics, indices and models. Describe the range of conditions under which models are applicable, and give narrative explanations of other sources of potential error (e.g., unexpected weather conditions).
- i. Chemical Quality Assurance/Quality Control. Evaluate and discuss chemical QA/QC to ensure that data collected is legally and scientifically defensible. All samples found to be out of control shall be flagged; use of such flagged data in developing the Baseline Risk Assessment shall be fully explained and defended.
- j. Interim Corrective Measures. The Consultant shall evaluate whether interim corrective measures may be necessary. In this evaluation, the Consultant shall review pertinent information about the source and nature of the release or potential threat of release, apply scientific judgment in evaluating the potential threat to human health or the environment, and provide recommendations in consideration of the immediacy and magnitude of the potential threat, the nature of the appropriate corrective action, and the implications of deferring correcting measures until completion of the RI/FS. Qualitative criteria may be used to assess the need for interim corrective measures. Where appropriate, the Consultant shall identify and assess qualitative criteria which may include, but not be limited to, the following:
- (1) Presence of sensitive ecosystems or endangered species;
 - (2) Data indicating that release concentrations may be increasing over time;
 - (3) Any information indicating that other contaminant sources may be contributing to overall adverse exposure;

- (4) Information indicating that exposure routes other than those addressed by quantitative criteria (e.g., dermal contact and phytotoxicity) are important; and
- (5) Additional exposures as a result of normal use of a contaminated medium (e.g., use of contaminated groundwater or surface water for drinking as well as for washing, cooking, showering, watering the lawn, etc.).

Where interim corrective measures are deemed necessary, the Consultant shall make a recommendation in writing to the Design Manager as soon as possible. The following factors shall be considered in determining the need for interim corrective measures:

- (1) Actual or potential exposure of nearby human populations or animals to hazardous wastes of constituents.
- (2) Actual or potential contamination of drinking water supplies or sensitive ecosystems.
- (3) Presence of hazardous wastes or constituents in drums, barrels, tanks, or other bulk storage containers that may pose a threat of release.
- (4) Presence of high concentrations of hazardous wastes or constituents in soils largely at or near the surface that may migrate readily to receptors, or to which the public may be inadvertently or unknowingly exposed.
- (5) Weather conditions that may cause hazardous wastes or constituents to migrate or be released.
- (6) Threat of fire or explosion.
- (7) Other situations or factors which may pose actual or imminent threats to human health or the environment.

k. Examples of Guidance.

- (1) U.S. EPA 540/G-89/004 (OSWER Directive 9355.3-01). Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA, October 1988.
- (2) U.S. EPA 540/1-89/002. Risk Assessment: Guidance for Superfund: Volume '1 : Human Health Evaluation Manual (Part A), December 1989.
- (3) U.S. EPA 540/1-80/001 A (OSWER Directive 9285.7-01). Risk Assessment Guidance for Superfund: Environmental Evaluation Manual, March 1989.
- (4) U.S. EPA 540/1-88/001 (OSWER Directive 9285.5-1). Superfund Exposure Assessment Manual, April 1988.

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- (5) U.S. EPA 1986. Guidelines for Exposure Assessment. Fed. Reg., Vol. 51, pgs. 33992-34003.
 - (6) U.S. EPA 1986. Guidelines for Mutagenicity Risk Assessment. Fed. Reg., Vol. 51, pgs. 34006-34012.
 - (7) U.S. EPA 1986. Guidelines for the Health Risk Assessment of Chemical Mixtures. Fed. Reg., Vol. 51, pgs. 34014-34025.
 - (8) U.S. EPA 1986. Guidelines for the Health Assessment of Suspect Developmental Toxicants. Fed. Reg., Vol. 51, pgs. 34028-34040.
 - (9) U.S. EPA 1986. Guidelines for Exposure Assessment. Fed. Reg., Vol. 51, pgs. 34042-34054.
 - (10) Donigan, A.S., Lo T.Y.R., Shanahan, E.W., 1983. Rapid Assessment of Potential Ground Water Contamination under Emergency Response Conditions. Anderson-Nichols/West. Palo Alto, CA for U.S. EPA, Washington, DC; Contract No. 68-03-3116.

7.2 Draft Final Remedial Investigation Report

Following completion of all field work, validation of all analytical results, and preparation of the risk assessment, the Consultant shall prepare a Draft Final Remedial Investigation Report. The draft report shall comprehensively present the data gathered during the Phase I and II Interim Investigations. Data presented shall be sufficient to allow detailed evaluations of the assessments and proposed remedial actions during the feasibility study.

The Final Remedial Investigation Report shall be formatted as follows, unless the nature of the contamination does not warrant or support the detail indicated below for the baseline risk assessment. In which case, the Consultant shall propose in writing for approval suggested modifications and justification for the modifications to the following format:

- 1.0 Executive Summary
- 2.0 Introduction
 - 2.1 Purpose of Report
 - 2.2 Site Background
 - 2.2.1 Site Description
 - 2.2.2 Site History
 - 2.2.3 Previous investigations

- 2.3 Report Organization
- 3.0 Study Area Investigation
 - 3.1 Surface Features
 - 3.2 Contaminant Source Investigations
 - 3.3 Meteorological Investigations
 - 3.4 Surface Water and Sediment Investigations
 - 3.5 Geological Investigations
 - 3.6 Soil and Vadose Zone Investigations
 - 3.7 Groundwater Investigations
 - 3.8 Human Population Surveys
 - 3.9 Ecological Investigations
- 4.0 Physical Characteristics of Study Area
 - 4.1 Surface Features
 - 4.2 Meteorology
 - 4.3 Surface Water Hydrology
 - 4.4 Geology
 - 4.5 Soils
 - 4.6 Hydrogeology
 - 4.7 Demography and Land Use
 - 4.8 Ecology
- 5.0 Site Characterization
 - 5.1 Sources of Contamination
 - 5.2 Soils and Vadose Zone
 - 5.3 Groundwater
 - 5.4 Surface Water and Sediments
- 6.0 Contaminant Fate and Transport
 - 6.1 Potential Routes of Migration
 - 6.2 Contaminant Persistence
 - 6.3 Contaminant Migration
- 7.0 Baseline Risk Assessment
 - 7.1 Human Health Evaluation
 - 7.1.1 Introduction
 - 7.1.2 Identification of Chemicals of Potential Concern
 - 7.1.2.1 General Site-Specific Data Collection Considerations
 - 7.1.2.2 General Site-Specific Data Evaluation Considerations
 - 7.1.2.3 Component 1
 - 7.1.2.4 Component 2 (Repeat for all areas as appropriate)
 - 7.1.2.5 Summary of Chemicals of Potential Concern
 - 7.1.3 Exposure Assessment
 - 7.1.3.1 Characterization of Exposure Setting

- 7.1.3.2 Identification of Exposure Pathways
 - 7.1.3.3 Quantification of Exposure
 - 7.1.3.4 Identification of Uncertainties
 - 7.1.3.5 Summary of Exposure Assessment
 - 7.1.4 Toxicity Assessment
 - 7.1.4.1 Toxicity Information for Non-Carcinogenic Effects
 - 7.1.4.2 Toxicity Information for Carcinogenic Effects
 - 7.1.4.3 Chemicals for Which No EPA Toxicity Values are Available
 - 7.1.4.4 Identification of Uncertainties
 - 7.1.4.5 Summary of Toxicity Assessment
 - 7.1.5 Risk Characterization
 - 7.1.5.1 Current Land-Use Conditions
 - 7.1.5.2 Future Land-Use Conditions
 - 7.1.5.3 Identification of Uncertainties
 - 7.1.5.4 Comparison of Risk Characterization Results to Human Studies
 - 7.1.5.5 Summary Discussion and Tabulation of the Risk Characterization
 - 7.1.6 Summary of Human Health Evaluation
 - 7.1.6.1 Chemicals of Potential Concern
 - 7.1.6.2 Exposure Assessment
 - 7.1.6.3 Toxicity Assessment
 - 7.1.6.4 Risk Characterization
 - 7.2 Environmental Evaluation
- 8.0 Remedial Investigation Summary and Conclusions
 - 8.1 Summary
 - 8.1.1 Nature and Extent of Contamination
 - 8.1.2 Fate and Transport
 - 8.1.3 Risk Assessment
 - 8.2 Conclusions
 - 8.2.1 Data Limitations
 - 8.2.2 Recommended Remedial Action Objectives
 - 8.2.2.1 Identification of Applicable or Appropriate and Relevant Standards (ARARs)
 - 8.2.2.2 Comparison of ARARs with Site Contaminant Concentrations
 - 8.2.2.3 Development of Preliminary Remediation Goals

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7.3 Final Remedial Investigation Report

Upon receipt of review comments on the draft report, the Consultant shall provide written responses to all review comments to the Baltimore District Design Manager. Upon resolution of all review comments and responses, the Consultant shall incorporate agreed upon responses into a Final Remedial Investigation Report.

Task 8 – Feasibility Study (Option)

At the option of the Baltimore District Design Manager, the following tasks shall be performed by the Consultant in support of the Feasibility Study:

- **Development and Screening of Alternatives.** Once sufficient data are available, the Consultant shall identify and screen Remedial Action Alternatives that will meet the Remedial Action Objectives identified during the Remedial Investigation phases. The alternative development will focus on the use of presumptive remedies from similar remedial activities.

Detailed Analysis of Remedial Alternatives. Based upon the results of the development and screening process, the Consultant shall perform detailed analyses (human health, environmental and institutional) of the alternatives identified. The Consultant shall perform comparative analyses of each alternative against EPA's nine step evaluation criteria and against each other. Performance of this task will involve refinement of the alternatives as well as technical and cost evaluations.

- **Treatability Studies.** Dependent upon the alternatives developed, it may be necessary to perform treatability testing. If required, the Consultant shall conduct bench and/or pilot studies as necessary to determine the suitability of remedial technologies to site conditions and problems. Technologies that may be suitable to the site should be identified as early as possible to determine whether there is a need to conduct treatability studies to better estimate the costs and performance capabilities. Should these studies be determined necessary, a testing plan identifying the types of goals of the studies, the level of effort needed, and the data management guidelines should be submitted to the Baltimore District Design Manager for review and approval. Upon approval, a test facility and any necessary equipment, vendors, and analytical services will be procured by the Consultant. Upon completion of the testing, the Consultant shall evaluate the results to assess the technologies with respect to the goals identified in the test plan. A report summarizing the testing program and its results should be prepared by the Consultant and presented in the Feasibility Study Report. The Consultant will implement all management and QC review activities for this task.

8.1 Draft Feasibility Study Report

The following format shall be used for the Feasibility Study Report.

- 1.0 Executive Summary
- 2.0 Introduction
 - 2.1 Purpose and Organization of Report
 - 2.2 Background Information
 - 2.2.1 Site Description
 - 2.2.2 Site History
 - 2.2.3 Nature and Extent of Contamination
 - 2.2.4 Contaminant Fate and Transport
 - 2.2.5 Baseline Risk Assessment
- 3.0 Identification and Screening of Technologies
 - 3.1 Remedial Action Objectives. For each medium of interest, present the following:
 - 3.1.1 Contaminant of Interest
 - 3.1.2 Allowable exposure based on risk assessment
 - 3.1.3 Development of remediation goals
 - 3.2 General Response Actions
 - 3.3 Identification and Screening of Technology Types and Process Options
- 4.0 Development and Screening of Alternatives
 - 4.1 Remediation Goals
 - 4.2 General Response Actions
 - 4.3 Institutional Requirements
 - 4.4 Remedial Action Alternatives
 - 4.4.1 Technical evaluations for all possible alternatives
 - 4.4.2 Cost analyses for all technically feasible alternatives
 - 4.4.3 Public Health requirements
 - 4.5 Screening of Alternatives
 - 4.6 Detailed Analysis of Alternatives
 - 4.6.1 Individual Analysis of Alternatives
 - 4.6.2 Comparative Analysis
- 5.0 Treatability Studies
 - 5.1 Test Objectives and Rationale
 - 5.2 Description of Technologies
 - 5.3 Experimental Design Procedures
 - 5.4 Sampling and Analysis
 - 5.4.1 Waste Analysis
 - 5.4.2 Treatment Process
 - 5.4.3 Operational Controls
 - 5.5 Data Management
 - 5.6 Analytical Results
- 6.0 Summary and Conclusions
 - 6.1 Summary
 - 6.1.1 Background

- 6.1.2 Remedial Action Technologies
- 6.1.3 Remedial Action Alternatives
- 6.1.4 Treatability Studies
- 6.2 Conclusions
 - 6.2.1 Data Limitations - Indicate the degree of variance in the data, including variance estimates for all statistics, assumptions underlying use of statistics, indices and models. Describe the range of conditions under which models are applicable and give narrative explanations of other sources of potential error (e.g., unexpected weather conditions).
 - 6.2.2 Identification of Remedial Action Alternatives
- 7.0 References
- 8.0 Appendices

8.2 Final Feasibility Study Report

Upon receipt of review comments on the draft report, the Consultant shall provide written responses to all review comments to the Baltimore District Design Manager. Upon resolution of all review comments and responses, the Consultant shall incorporate agreed upon responses into a Final Feasibility Study Report.

Task 9 Meetings/Conferences

9.1 Project Meetings and Reporting

9.1.1 Project Meetings

Representatives of the Corps of Engineers will hold seven meetings to be held in Amherst, NY. A meeting will be scheduled at the inception of this project with the landowners to inform them of ongoing activities and coordinate field investigations to aid in the development of the project schedule. Three Review Conferences will be held (to discuss comments to the work plan, HASP, and SAP, to discuss comments to the Draft Phase I Interim RI Report and to discuss comments to the Draft Phase II Interim RI Report). A meetings will be held to discuss the requirements for the unpriced options, (eg. the Baseline Risk Assessment and Final RI Report and the Feasibility Study) . Two optional meetings will be planned, subject to be determined and scheduled on an as needed basis. All meetings and conferences shall be attended by up to four (4) members of the Consultants project team.

1 leave
3 rev.
1 - BCR
2 opt.

The Consultant will be responsible for generating and distributing meeting minutes for all project related meetings and conferences involving the Consultant. The Consultant shall, within 14 days of the meeting, submit a draft version of the meeting minutes to the Baltimore District Design Manager for approval prior to distribution of the minutes to meeting attendees. The Consultant shall assume a total of seven meetings for costing purposes.

9.1.2 Monthly Progress Report

Upon Receipt of Order, the Consultant shall prepare a project schedule to show the proposed schedule for the completion of the work. The project schedule shall be prepared in reproducible form and submitted for approval. The actual project progress schedule shall be submitted by the 15th day of each month and indicate project progress as of the end of the previous month. The project schedule must be revised to reflect modifications and other approved changes in scheduling.

Along with the project schedule, the Consultant shall prepare monthly updates of project progress in the form of a letter to be submitted to the Baltimore District Design Manager. This reporting shall include a summary of activities completed during the previous month, anticipated activities for the coming month, an updated project schedule, a discussion of departures from the work plan and the causes for the departures, and a budget reconciliation.

9.2 Technical Review Committee Meeting

The Consultant shall present the results of the RI/FS to the Technical Review Committee at a meeting to be held in Amherst, NY. The Consultant shall be responsible for preparing all visual aid materials for the meeting with prior approval of all meeting materials by the Baltimore District Design Manager. The Consultant shall be represented by personnel familiar with all aspects of the work presented.

9.3 Public Information Session

The Consultant shall attend a public information session, if required, in support of the selected remedial alternative.

Task 10 Submittal Schedule

10.1 Project Coordination and Schedule Meeting

The Consultant shall schedule a meeting 15 days following the Receipt of Order, to be attended by members of their project team, Corps of Engineer representatives, and

affected landowners. The purpose of the meeting will be to inform landowners of planned project activities and coordinate the scheduled field investigations.

10.2 History Search Report

10.2.1 Draft History Search Report

The Consultant shall submit a Draft History Search Report within 60 working days after the date of the Receipt of Order.

10.2.2 Final History Search Report

The Consultant shall submit written responses to review comments on the Draft History Search Report within 20 working days of receipt of all comments on the draft report. The Consultant shall submit a final version of the History Search Report within 10 working days of resolution of all comment responses. The final documents submitted to the Baltimore District Design Manager shall be provided on CD-ROM in addition the hard copies identified under Task 11

10.3 Sitewide Planning Documents

10.3.1 Draft Sitewide Planning Documents

The Consultant shall submit the Draft Sitewide Work Plan, HASP, SAP and Community Relations Plan within 30 working days following the approval of the Final History Search Report.

10.3.2 Final Sitewide Planning Documents

The Consultant shall submit written responses to all review comments on the Draft Planning Documents within 20 working days of receipt of comments on the draft documents. The Consultant shall then submit final versions of the planning documents within 10 working days of resolution of all comment responses. The final documents submitted to the Baltimore District Design Manager shall be provided on CD-ROM in addition the hard copies identified under Task 11

10.4 Phase I Interim Remedial Investigation Planning Documents

10.4.1 Draft Phase I Interim Remedial Investigation Planning Documents

The Consultant shall submit the Draft Phase I Interim Investigation Work Plan, HASP and SAP within 30 working days following the date of approval of the Final Sitewide Planning documents.

10.4.2 Final Phase I Interim Remedial Investigation Planning Documents

The Consultant shall submit written responses to review comments on the Draft Phase I Interim Investigation planning documents within 20 working days of receipt of all comments on the draft documents. The Consultant shall submit a final version of the Phase I Interim Investigation planning documents within 10 working days of resolution of all comment responses. The final documents submitted to the Baltimore District Design Manager shall be provided on CD-ROM in addition the hard copies identified under Task 11.

10.5 Phase I Interim Remedial Investigation Report

10.5.1 Draft Phase I Interim Remedial Investigation Report

The Consultant shall submit a Draft Phase I Interim Remedial Investigation Report within 90 working days following the date of approval of the Final Investigation Planning documents and Corps of Engineers execution of access agreements with landowners.

10.5.2 Final Phase I Remedial Investigation Report

The Consultant shall submit written responses to review comments of the Draft Phase I Interim Remedial Investigation Report within 20 working days of receipt of all comments on the draft documents. The Consultant shall submit a final version of the Investigation Report within 10 working days following resolution of all comment responses.

10.6 Phase II Interim Remedial Investigation Planning Documents

10.6.1 Draft Phase II Interim Remedial Investigation Planning Documents

The Consultant shall submit a Draft **Phase II Interim Remedial Investigation** Work Plan, HASP, and SAP within 30 working days following approval of the Final Phase I Interim Remedial Investigation Report.

10.6.2 Final Phase II Interim Remedial Investigation Planning Documents

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The Consultant shall submit written responses to review comments on the Draft Phase II Interim Remedial Investigation planning documents within 20 working days of receipt of all comments on the draft documents. The Consultant shall submit a final version of the Phase II Interim Remedial Investigation planning documents within 10 working days following resolution of all comment responses. . The final documents submitted to the Baltimore District Design Manager shall be provided on CD-ROM in addition the hard copies identified under Task 11

10.7 Phase II Interim Remedial Investigation Report

10.7.1 Draft Phase II Interim Remedial Investigation Report

The Consultant shall submit a Draft Phase II Interim Remedial Investigation Report within 110 working days following approval of the Final Phase II Interim Remedial Investigation planning documents and Corps of Engineers execution of access agreements with landowners.

10.7.2 Final Phase II Interim Remedial Investigation Report

The Consultant shall submit written responses to review comments on the Draft Phase II Interim Remedial Investigation Report within 20 working days following receipt of all review comments on the draft report. The Consultant shall submit a final version of the Phase II Interim Remedial Investigation Report within 10 working days following resolution of all comment responses. The final documents submitted to the Baltimore District Design Manager shall be provided on CD-ROM in addition the hard copies identified under Task 11.

10.8 Remedial Investigation Report

10.8.1 Draft Remedial Investigation Report

The Consultant shall submit a Draft Remedial Investigation Report within 110 working days following approval of the Final Phase II Interim Remedial Investigation Report and Corps of Engineers execution of access agreements with landowners.

10.8.2 Final Remedial Investigation Report

The Consultant shall submit written responses to review comments on the Draft Remedial Investigation Report within 20 working days following receipt of all review comments on the draft report. The Consultant shall submit a final version of the Remedial Investigation Report within 10 working days following resolution of all comment responses. The final documents submitted to the Baltimore District Design Manager shall be provided on CD-ROM in addition the hard copies identified under Task 11.

10.9 Feasibility Study Report

10.9.1 Draft Feasibility Study Report

The Consultant shall submit a Draft Feasibility Study Report within 110 working days following approval of the Final Remedial Investigation Report and Corps of Engineers execution of access agreements with landowners.

10.9.2 Final Feasibility Study Report

The Consultant shall submit written responses to review comments on the Draft Feasibility Study Report within 20 working days following receipt of all review comments on the draft report. The Consultant shall submit a final version of the Feasibility Study Report within 10 working days following resolution of all comment responses. The final documents submitted to the Baltimore District Design Manager shall be provided on CD-ROM in addition the hard copies identified under Task 11.

Task 11 – Review Distribution List and Locations

Addresses and POCs	All Reports Draft	Final
U.S. Army Engineer District, Baltimore ATTN: CENAB-EN-HN (Ms. Justina Wesley) City Crescent Building, Room 10200 10 South Howard Street Baltimore, MD 21201	6	6 Also on CD-ROM
U.S. Army Engineer District, New York ATTN: CENAN-ED-CO (Ms. Allison Ali) 26 Federal Plaza New York, NY 10278	2	2
U.S. Army Engineer Division, Missouri River ATTN: CEMRD-ED-CG (Mr. Don Williams) 420 South 18th Street Omaha, NE 68144	4	4
U.S. Army Engineer Division, Huntsville ATTN: CEHND-PM-MC (Mr. Bob Noir) 106 Wynn Drive North Huntsville, AL 35805-4766	2	2
New York State Dept. of Environment Conservation Division of Hazardous Substance Regulation ATTN: Mr. Kent Johnson 50 Wolf Road Albany, NY 12233	1	1
New York State Dept. of Environment Conservation, Region 9 ATTN: Mr. Frank Shattuck, Regional Permit Engineer 270 Michigan Avenue Buffalo, NY 14203	1	1
U.S. Environmental Protection Agency, Region II Hazardous Waste Facilities Branch ATTN: M.s. Carol Stein 26 Federal Plaza, Room 1037 New York, NY 10279	1	2
Lewiston Public Library 308 South 8th Street Lewiston, NY 14092	1	1
CWM Management Services, Inc.* ATTN: Ms. Rebecca Zayatz PO Box 200 1550 Balmer Road Model City, NY 14107	1	1

Addresses and POCs (Cont'd)	All Reports Draft	Final
Somerset Group, Inc. * ATTN: Mr. John Syms Lew-Port Industrial Park Balmer Road Youngstown, NY 14174	1	1
Town Supervisor Lewiston, NY	1	1
Town Supervisor Porter, NY	1	1
Total No. of Copies	22	23

* Or other property owner(s) as applicable.

NOTE: USACE, EPA REGION II AND NEW YORK STATE DEPARTMENT OF ENVIRONMENT (NYDEC) REQUIRE 25 WORK DAYS FOR REVIEW OF DELIVERABLES FOR THE DURATION OF THIS PROJECT.

Table 1
Soil Matrix Samples
Phase I Remedial Investigation

Area	Investigative Method	Locations	Analyses	Soil Matrix										
				Surface Soil	Subsurface Soil	Sewer Sediment	Surface Sediment	Duplicates (10%)	Field Blanks (5%)	MS/MSD (5%)	Total Samples	Field QA/QC (10%)	Trip Blanks	External QA/QC (10%)
Component 1														
Areas A 8 B	Geoprobe	20	Field GC	-	150	-	-	-	-	-	150	15	-	15
			SW-846	-	10	-	-	1	1	1/1	14	-	4	1
			TCL/TAL	-	-	-	-	-	-	-	100	10	-	10
TNT Bldgs	Geoprobe	20	Field GC	-	100	-	-	-	-	-	100	10	-	10
			SW-846	-	5	-	-	1	1	1/1	9	-	2	1
			TCL/TAL/TNT	-	-	-	-	-	-	-	20	-	-	-
			TNT Screen	-	20	-	-	-	-	-	20	-	-	-
Surface Soil Sampling	20	PCB Screen	20	-	-	-	-	-	-	20	-	-	-	
		SW-846	10	-	-	-	1	1	1/1	14	-	-	1	
		PCBs	-	-	-	-	-	-	-	-	-	-	-	
TNT Sewers	Wipe/Chip Geoprobe	20	SW-846 TNT	20	-	-	-	2	1	1/1	25	-	-	2
			20	Field GC	-	150	-	-	-	-	-	150	15	-
Excavation	20	SW-846	-	10	-	-	-	1	1	1/1	14	-	4	1
		TCL/TAL/TNT	-	-	-	-	-	-	-	-	-	-	-	
		SW-846	-	20	20	-	4	2	2/2	46	-	4	4	
		TCL/TAL/TNT	-	-	-	-	-	-	-	40	-	-	-	
Well-PI 2-2S	Geoprobe	10	TNT Screen	-	20	20	-	-	-	-	75	8	-	8
			Field GC	-	75	-	-	-	-	-	75	8	-	8
			SW-846	-	5	-	-	1	1	1/1	9	-	2	1
AFP-68 Sewers	Geoprobe	20	TCL/TAL	-	-	-	-	-	-	-	150	15	-	15
			Field GC	-	150	-	-	-	-	-	150	15	-	15
			SW-846	-	10	-	-	1	1	1/1	14	-	4	1
Nike Base	Geoprobe	30	TCL/TAL	-	-	-	-	-	-	-	225	23	-	23
			Field GC	-	225	-	-	-	-	-	225	23	-	23
			SW-846	-	10	-	-	1	1	1/1	14	-	2	1
Waterline Construction Areas	Excavator	10	TCL/TAL	-	-	-	-	-	-	-	40	4	-	4
			Field GC	-	40	-	-	-	-	-	40	4	-	4
			SW-846	-	5	-	-	1	1	1/1	8	-	2	1
Property G	Geoprobe	20	TCL/TAL	-	-	-	-	-	-	-	150	15	-	15
			Field GC	-	150	-	-	-	-	-	150	15	-	15
			SW-846	-	5	-	-	1	1	1/1	9	-	2	1
PCB Warehouse	Geoprobe	10	TCL/TAL	-	-	-	-	-	-	-	75	8	-	8
			Field GC	-	75	-	-	-	-	-	75	8	-	8
			SW-846	-	5	-	-	1	1	1/1	9	-	2	1

Table 1
Soil Matrix Samples
Phase I Remedial Investigation

Area	Investigative Method	Locations	Analyses	Soil Matrix										
				Surface Soil	Subsurface Soil	Sewer Sediment	Surface Sediment	Duplicates (10%)	Field Blanks (6%)	MS/MSD (6%)	Total Samples	Field QA/QC (10%)	Trip Blanks	External QA/QC (10%)
Component 2														
AFP-68 Sewers	Geoprobe	20	Field GC	-	40	-	-	-	-	-	40	4	-	4
			SW-846	-	5	-	-	1	1	1/1	9	-	2	1
			TCL/TAL											
Component 3														
Boos Property	Geoprobe	20	Field GC	-	150	-	-	-	-	-	150	15	-	15
			SW-846	-	5	-	-	1	1	1/1	9	-	2	1
			TCL/TAL											
Fin, Feather, and Fur Club	Surface Soil Sampling	10	SW-846 TCL/TAL/TNT	10	-	-	-	1	1	1/1	14	-	2	1
Long's Walleye Hatchery	Surface Soil Sampling	20	TNT Screen	20	-	-	-	-	-	-	20	-	-	-
			SW-846	20	-	-	-	2	1	1/1	25	-	-	2
			TNT											
Site Drainage Systems	Surface Sediment Sampling	20	SW-846 TCL/TAL	-	-	-	20	2	1	1/1	25	-	4	2
Totals:		290		100	1440	40	20	23	18	34	1672	132	38	155

Notes:
Shaded areas indicate field testing.
Does not include BRA or confirmation sampling on Somerset Property.

TCL = SW-846 Methods 8240, 8270, and 8080
TAL = SW-846 Methods 6000/7000 series
TNT = SW-846 Method 8330